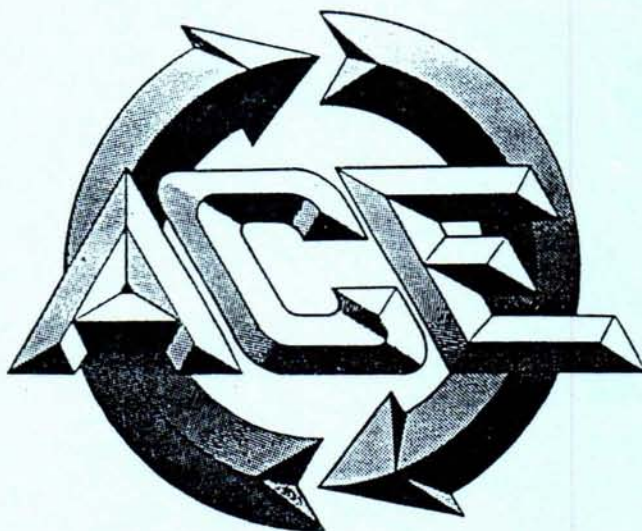


FEEDBACK

ADELAIDE ATARI COMPUTER CLUB

AN



GROUP

ATARI COMPUTER ENTHUSIASTS

IN THIS ISSUE :

LANGUAGES FOR ATARI
"SORTDIR" A DIRECTORY SORTER
GEM TREASURES IN BASIC
TIME TESTS
LISTING: "HORSEPLAY"

welcome.

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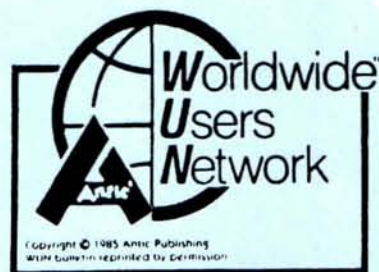
Meetings are held on the *first Monday* of each month (or *second* if the first clashes with a public holiday), at Gillies Street Primary School, City; and the *third Monday* of each month at Modbury West Primary School (cnr Wright/Kelly Roads, Main Building).

ILLEGAL COPYING WILL NOT BE TOLERATED AT CLUB MEETINGS.

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President's Byte

To all Members and Readers my best wishes, and I hope you had a Happy Christmas and will enjoy good fortune in this New Year.

It's time for two things, stocktaking and resolutions. As I read the newsletters of other groups around the world I see the theme I have been harping on starting to come from others as well. Don't stop complaining when Atari does the wrong thing, but for heaven's sake realise how much they are doing right and give them credit for the very real achievements of 1987.

In coming to Australia, Atari has finally given us hardware at prices which are at the worst comparable to the rest, and at the best, world beating. The software scene is starting to catch up and how well that does, depends not only on Atari but also on retailers and Atari Users.

A New Year resolution for all of us involves studying and buying or writing GOOD software. A second resolution for members covers the writing of a short review for this newsletter each time you buy a new program. Many computers gather dust because the owners don't know that software is available to do the jobs that involve them in a great deal of effort on a regular basis quickly and easily.

Those of us who have been involved in purchasing goods from overseas for use in Australia know a little of the problems facing Atari and consider they deserve sympathetic consideration and an attitude which says "How can WE solve this problem?" rather than "What can we do to make them fix this up". I am most grateful to Tony Willmott for his attendance at club meetings and his willingness to answer questions and try to solve members' problems. Of course the Club needs this consideration as well. The quality of this newsletter and of the Club meetings is the responsibility of the whole Club. Ask yourself what you are doing with your computer that could help others with similar tasks, you will find that helping others pays off and helps you as well.

Thank you to Brian Petersson for taking on the job of Vice-President. Let's see what Adelaide Atari Computer Club members can do with the Power they have in 1988.

EL PRESIDENTE

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Odds & Ends

by Neil Patterson

Since writing the last column, things have been happening at a frantic rate! Many of them are things we have been expecting for months but now suddenly they are all around us.

The XF551 Disk Drive has been delivered, and what an interesting device it is. The one I have been examining is privately owned so there are a couple of months to go before the internal examination, but externally it is attractive, about 17 mm lower in profile than the 1050 and much better ventilated and only earns it's designers two black marks, one for omitting the power on indicator and the other for shifting the power switch to the rear. The power supply remains the standard 9Vac Atari unit but the lack of indication and the hidden switch make it difficult to tell if the drive is on, and will need an owner modification to rectify. No complaints about the the DOS supplied, DOS 2.5 still does a good job and I am grateful that ATARI did not make prospective disk drive owners wait until ADOS was complete.

A number of 1050 owners are having difficulties in getting repairs on their drives completed and the Club will be most grateful to hear of a spares source for 1050 components. (One particular problem item is the Zero track detector.) The main thing about the new drive is that it works on almost everything I have tried and that includes some rather exotic protection systems. Problems relate to the long access time which leads to error messages.

Another problem involves difficulties in formatting disks, and present indications are that it is not possible to use existing techniques to format the back of disks by notching the cover. The front of the disk can be formatted after the disk drive has been run for some time. When operated immediately after being switched on the drive formats the disk successfully, but is unable to test properly and gives an error 138 and 000 sectors available. Atari are looking hard at these problems and the fix should soon be available but in the interim I am grateful that Australia is now in the forefront when it comes to new products from Atari.

Newsletters from overseas User Groups talk of some problems with the first XEP80's released, but again they appear to show the need for a little fine tuning and some more software to use the new hardware.

Don't be surprised to see Will Visser come up with modifications to SUPERDOS to cope with the XF551. Alec Benson is anxious to try out Spartados on it as well so hopefully more news of the XF551 next issue.

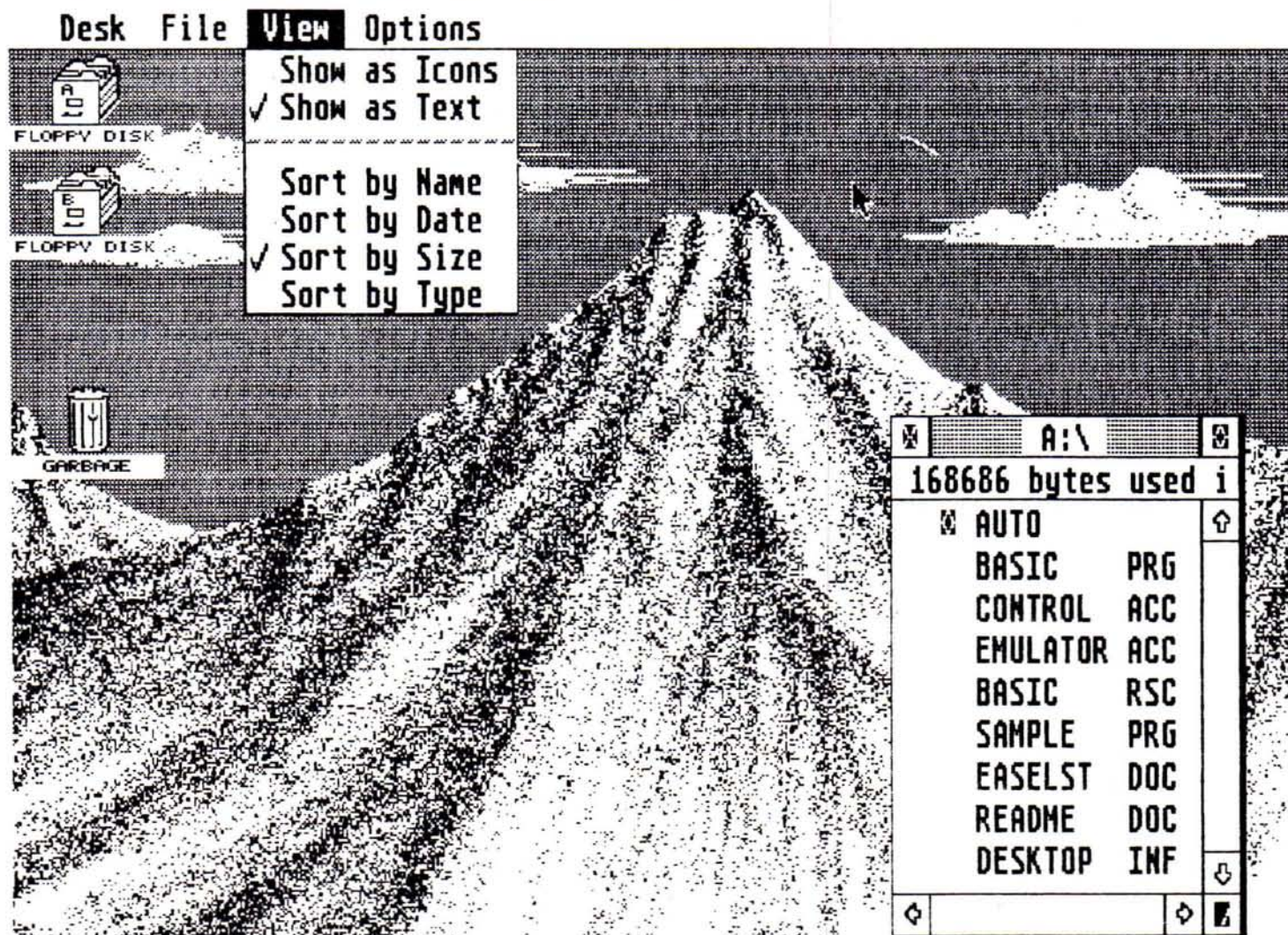
The problem of getting components for computers and delivering them is world wide and affecting all manufacturers from IBM down, so once again don't think it's just Atari with delivery problems.

Compute!'s December issue includes news of new "Sesame Street" software from Hi-Tech Expressions and a range of budget packages from Star Soft International. Artworx offer Cycleknight, and Clearstar Softechnologies offer Lightspeed C, Elite Personal Accountant, Classy Chassy and Time Bomb. Happy Computers have

announced a program to transfer files between IBM compatible PC's and 8-bit Ataris in both directions and the latest Infocom interactive romance 'Plundered Hearts' has been released for all Atari computers. Krentek Software offer Borodino as the latest wargame set in Russia and give you the same chance that Napoleon had in 1812.

Antic's December issue notes the release of a Graphics Companion extending Video Title Shop, the four Clearstar titles mentioned above, an update to the First Xlent Word Processor from XLEnt Software and at last a translation of Hi-Tech Expressions' Awardware.

Just because I haven't listed it here don't think it hasn't happened, before you say, but that isn't available for the 8-bit Atari ask around, you could be surprised.



EASEL/ST (by Computer Fenestrations US) lets you use any picture as the background of the GEM desktop. A demo version (disk 212) loads 3 pictures in - one for each resolution. Use this as your boot-up disk. Much better than looking at a plain background. (100K required). The actual version will only load one picture at a time for each resolution thus saving space.

HEARD ON THE GRAPEVINE

The following information has not been verified but has some basis in fact, although some parts may end up being fiction through the passage of time.

According to this month's crystal ball, Atari will within the next year release a super computer, giving you and I the power of a small mainframe computer. The forecasted computing speed of this fire breathing beast of sheer electronic intelligence, will be around 15 million instructions per second. Considering your current ST is motoring along at about 700 thousand instructions per second, to say the new machine is turbo charged is an understatement. For the technically minded the new unit will be based on the new INMOS T800 transputer. The transputer will have a clock frequency of 20 Mhz and has an on board 32 bit maths co-processor and four serial data links capable of data rates up to 20 MegaBits per second.

The graphic capability of the machine will be somewhat enhanced in comparison to the current ST. The maximum resolution will be 1280 by 960 pixels in four colours. At lower resolutions the colour selection will only be limited by the colour monitor.

First production of the units will be manufactured as an add-on to an ST. A stand alone unit will follow at a later date. Estimated price, less than US\$1600.00! Where can I get one?

As a follow up to the above, on the Australian scene there is an interesting project described in January's Australian Electronics Monthly, on building a Supermicro. Although one may ask, what has this to do with the ST, there are actually, some very interesting ST applications. If you're interested read on.

The project is based on a kit made by Maestro using a Novix NC4016 16-bit superprocessor. This chip is similar to the Inmos transputer described above in that very similar computing speeds can be reached. Whilst the Novix Chip is not strictly a Transputer, it has many similarities.

The Novix Chip is based on a simple instruction set based on the Fourth language. The chip was designed by Charles Moore (who invented the Fourth language). As the chip can execute the fourth microcode directly, the instructions are executed at lightning speed.

This kit consists of a processor board based on the Novix Chip, one meg of high speed RAM and half a Meg of ROM and high speed serial communications ports which would allow connection to the ST.

The ST would be able to act as a front end to this unit in a similar manner to that planned by Atari for its Inmos based unit. The price of the Kit will be approx \$700.00 Australian, so if you are interested I strongly suggest you read the article.

Languages for Atari

By Warren Hinscliff

Reprinted from: West Australian, October 1987

Part One.

Many people buying an ST want to do some programming, but have never done so before, or have only experienced Atari BASIC on the 8-bit computers. They are faced with a confusing choice between nearly a dozen different programming languages, most of which are available in several different versions from different companies.

Although BASIC is the most familiar to most people, it is also one of the least powerful, and other languages would be better to use in some situations. ST owners have the chance to learn new programming languages at home where previously they were only available on much more expensive machines. Even if you want to stay with BASIC, there are several other versions available that are much better than Atari ST BASIC, which, although free, is a slow and basic version.

I hope this article will help to explain some of the general features of these languages.

INTERPRETERS AND COMPILERS

The actual language understood by a computer consists of a string of binary numbers (0s and 1s) and is known as machine code. This is extremely painful to program in, so other languages were invented that translate more English-like statements into machine code. There are two ways this conversion can be done: with Interpreters and Compilers.

Interpreted languages work like a human interpreter would translate, say, French to English, translating French speech into English speech phrase by phrase. It moves through the program, translating statements one at a time. These statements are executed by the computer as they are translated, and this process must be repeated every time a statement is executed. Atari BASIC is an example of an interpreted language.

Compiled languages take the whole program and convert it to machine code, and then execute the machine code after it has all been converted. This would be the equivalent of our human interpreter listening to French speech, writing it down as English until the end, and then reading back the whole speech in English.

Each has its advantages and disadvantages. Interpreters are cheap (easy to develop), take up less memory and start executing programs immediately. However, since every statement must be examined and converted as it is executed, they are slow. Compilers are more expensive, usually take up more memory, and a program may take a few minutes to compile. The final product is, however, very fast and can be run without the programming language having to be in the memory.

Using an interpreter is simple and will be familiar to Atari

RUN and the program starts executing. Program errors are reported as the interpreter reaches them.

A compiler is more complicated to use, and differs from version to version, but here is the usual procedure. Most compilers store the final product on disk, so your program must be given a name. After the program has been written on an editor, a COMPILE command is given, and your program, known as the source file, is compiled to produce the object file, usually named (programe).OBJ, which is saved on disk. Errors are found during this step and must be corrected before the object code can be produced.

Often there is another step. A Linker is used to merge together your source file with library routines you have used in your program. For example, in the C Language, this line is included in the source file to use the input-output library: #include `stdio.h`.

A number of languages allow you to split your program into several parts, known as modules, and compile them separately linking them together before executing. This means that if you make an error or make a minor change, you don't have to re-compile your whole program, it therefore saves time.

Sometimes there is yet another step. An optimiser is used on your program. This is a 'smart' compiler that changes your object code so that it runs faster and uses less memory.

Once all these steps are completed, your object code can be run like any other machine code program, such as commercial games and utilities.

Some 'compilers' produce 'pseudo-code' or 'p-code', which is not machine code, but this can be interpreted much faster by a special interpreter. The Turbo BASIC Compiler for the Atari 8-bit computer is an example of this.

Most languages are available in both compilers and interpreters (eg BASIC), while others (eg C) are available only as compilers. The best method would be to use an interpreter to develop a program, and then compile the final version.

Next month I hope to list the languages available for the ST (I counted 12 different ones advertised in magazines), with a short description of their uses, strong and weak points, and availability.

SORTDIR

A DIRECTORY SORTER

by Pete Radencic

Reprinted from SPACE Vol. 6 No. 9 Oct/Nov 87

When you list your disk directory, do you have the same problem I have? Locating that file name! Your directory is in a (so called) random sequence (as you created the files) not alphabetically! If you're like me, you like your files organised. That means you have to:

- 1) initialise a new disk
- 2) write the new DOS files
- 3) write the new "AUTORUN.SYS" and other helpful files
- 4) copy each file (alphabetically) to the new disk.

Try my "SORTDIR". It will sort the directory into alpha sequence. This is great, but the problem with the disk is Atari attaches a number to each file. This number must match the sequence number of the directory.

My Sortdir, reorganises the directory and each file. This means that all programs and files can be accessed by "DOS" and any program. The disk "READ" and "WRITE" routines were taken from ANTIC magazine, March 1984, "Diskread" by Martin Rex of West Germany. My thanks to him for helping me correct many data files. The following listing can be obtained from "SPACE" library and is intended for all users of Atari machines. It works with DOS 2.0 and 2.5.

Program take apart

Lines 9 thru 30 set up the variables.
Line 40 requests disk to be reorganised.
Lines 60 thru 120 read and store the directory.
Lines 200 thru 360 sort the directory.
Lines 4020 thru 4110 is an error routine.
Lines 5000 thru 5230 will rewrite each sector with the new file number. Old file numbers that match the new file number are bypassed.
Lines 7120 thru 7190 is a byte conversion routine for the file number.

Additional aids

Locations 778 and 779 set the sector to be read or written.
Location 769 sets the device number.
Location 770 is the status code returned to the user (program).

I hope it works as well for you as it has for me.


```

2 REM SORTDIR
3 REM BY PETE RADENCIC
4 REM HARRISBURG, PA
9 NES=1:EOF=0:GRAPHICS 0
10 DIM CALL$(5),BUF$(129),H$(3),AC$(10)
   ,N$(100),X$(3),E$(30),A$(10)
15 DIM BUF1$(1024):BUF1$=""
30 BUF$(1)="" : BUF$(129)="" : BUF$(2)=BUF
   $
35 TRAP 60
40 ? "INSERT DISK TO BE REORGINIZED
   PRESS RETURN":INPUT X$
45 ? "  READING DIRECTORY"
60 FOR NUM=361 TO 368
90 GOSUB 4500:POKE 779,INT(NUM/256):PO
KE 778,NUM-INT(NUM/256)*256:POKE 769,1
:POKE 770,82:V=USR(ADR(CALL$))
100 BUF$(129)=" ":ER=PEEK(771):IF ER<>
1 THEN GOTO 4020
110 BUF1$(LEN(BUF1$)+1)=BUF$(1,128)
115 IF BUF$(1,5)="00000" THEN POP :GOT
O 200
120 NEXT NUM
200 ? "  SORTING DIRECTORY"
205 A=LEN(BUF1$)/16:TRAP 40000
210 FOR B=1 TO A:IF BUF1$(B*16,B*16+4)
="00000" THEN POP :GOTO 300
220 NEXT B
300 A=B-1:IF BUF1$(6,16)="DOS      SYS"
   THEN C=2
305 IF BUF1$(22,32)="DUP      SYS" THEN
   C=3
310 SW=0
320 FOR B=C TO A-1:IF BUF1$(B*16-10,B*
16)>BUF1$(B*16+6,B*16+16) THEN GOTO 35
0
330 NEXT B:IF SW=0 THEN 365
340 GOTO 310
350 BUF$=BUF1$(B*16-15,B*16):BUF1$(B*1
6-15,B*16)=BUF1$(B*16+1,B*16+16):BUF1$
(B*16+1,B*16+16)=BUF$:SW=1:NEXT B
360 IF SW=1 THEN 310
365 ? "  REWRITING DIRECTORY"

```


SORTDIR CONTINUED

```
400 FOR NUM=361 TO 361+LEN(BUF1$)/128-1
410 GOSUB 500:B=NUM-360:BUF$=BUF1$(B*128-127,B*128):GOSUB 4005:NEXT NUM
420 GOTO 5000
500 POKE 779,INT(NUM/256):POKE 778,NUM-INT(NUM/256)*256:RETURN
4005 GOSUB 4500:POKE 769,1:POKE 770,87:V=USR(ADR(CALL$)):ER=PEEK(771):IF ER=1 THEN RETURN
4020 E$="":IF ER=128 THEN E$="BREAK key abort"
4030 IF ER=138 THEN E$="Device timeout"
4040 IF ER=139 THEN E$="Device malfunctions"
4050 IF ER=140 THEN E$="Serial bus input framing"
4060 IF ER=142 THEN E$="Data frame overrun"
4070 IF ER=143 THEN E$="Data frame checksum"
4080 IF ER=144 THEN E$="Disk write-protected"
4090 IF ER=160 THEN E$="Drive number unknown"
4100 IF ER=163 THEN E$="Unrecoverable system"
4105 REM 34 spaces before up arrow on next line
4110 ? "ERROR -";ER;" ";E$;"":FOR I=1 TO 900:NEXT I: ? "
      ":END
4500 CALL$="h S":CALL$(4)=CHR$(228):CALL$(5)=CHR$(96)
4510 V=ADR(BUF$):POKE 773,INT(V/256):POKE 772,V-INT(V/256)*256:RETURN
5000 DIM CBIN$(32):CBIN=ADR(CBIN$)
5010 FOR A=1 TO 32:READ D:CBIN$(A,A)=CHR$(D):NEXT A
5020 DATA 104,104,104,141,144,6,141,145,6,78,144,6,78,144,6,162,5,14,145,6,2
```


SORTDIR CONTINUED

```
5021 FOR A=1 TO LEN(BUF1$)/16
5022 IF BUF1$(16*A+1,16*A+5)="00000" THEN POP:GOTO 5030
5023 NEXT A
5030 FOR X=2 TO A-1
5040 Y=16
5050 R=ASC(BUF1$(Y*X+2,Y*X+2))
5060 S=ASC(BUF1$(Y*X+3,Y*X+3))
5070 T=ASC(BUF1$(Y*X+4,Y*X+4))
5080 U=ASC(BUF1$(Y*X+5,Y*X+5))
5090 R=S*256+R:T=U*256+T
5095 ? " WORKING WITH ";BUF1$(Y*X+6,Y*X+16)
5100 NUM=T
5110 GOSUB 4500:POKE 779,INT(NUM/256):
POKE 778,NUM-INT(NUM/256)*256:POKE 769,1:POKE 770,82:V=USR(ADR(CALL$))
5120 BUF$(129)=" ":ER=PEEK(771):IF ER<>1 THEN GOTO 4020
5130 GOSUB 7160
5140 IF PEEK(1680)=X THEN GOTO 5230
5150 A$=CHR$(X):A=ASC(A$):POKE 1680,A
5160 A=PEEK(1680)*4+PEEK(1681)
5170 BUF$(126,126)=CHR$(A)
5180 POKE 779,INT(NUM/256):POKE 778,NUM-INT(NUM/256)*256
5190 GOSUB 4500:POKE 769,1:POKE 770,87:V=USR(ADR(CALL$)):ER=PEEK(771)
5200 IF ER<>1 THEN 4020
5210 NUM=NSC:IF NUM=0 THEN 5230
5220 GOTO 5110
5230 NEXT X:? " DISK REORIGINIZED":END
7120 REM
7130 REM *** BYTE CONVERT ***
7140 REM
7160 Z=USR(CBIN,ASC(BUF$(126,126)))
7170 FNO=PEEK(1680):NSHI=PEEK(1681):NSLO=ASC(BUF$(127,127)):NBTS=ASC(BUF$(128,128))
7180 NSC=NSHI*256+NSLO
7190 RETURN
```


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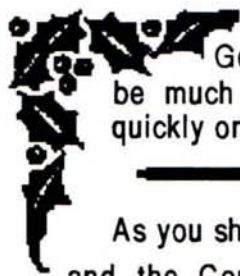
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NORM PEARCE



Since the last issue of Gosub St was so large, this will be much smaller, especially coming so quickly on the heels of the that one.

As you should see, this is a Xmas issue and the Committee wish all members the best for Xmas and the New Year. A reminder now that the next meetings will be January 4th and 18th, both at Gilles St Primary School.

In the last issue I gave brief rundowns on what I could find in new software on the way. Even since then, heaps of other new titles are beginning to surface, previously unknown. Speaking to Microbase in Perth, they say some 50 new games have just been released in the UK.

On the local scene, more budget priced software (\$29 - \$39) is being distributed. One new title at Ibas on Friday was a Go-Kart racing game. Spaceland, Ibas, Northeast and Highbury all have some new software and The Computer Centre also have some I understand.

Kent Town Computers also are starting to stock some software - but more in the education/business areas.

As I may have mentioned before, Kent Town Computers offer a Laser Printing Bureau service. DIY or Have-it-done. If you take your ST disk in and print your own files then a charge of \$1 per page maximum will apply (less for more copies). Also, they are willing to hire out the ST room for \$10 per hour. Available are 520 colour and 1040 Mono with Hard Drive and the Laser Printer (HP compatible 300dpi) and Publishing Partner. The \$10 is your setup and working time - printing time is free. If you want to experiment with desktop publishing then this may be what you want. Anyway discuss your requirements with Graham at Kent Town. And my thanks for this column being Laser Printed.

Atari Computers' special offer has officially ended (December 19th) but you may still see these around until January 1st depending on dealer stocks.



As of January 1st 1988, new prices for hardware will apply as follows:-

520STFM ... \$899
 1040ST ... \$1199
 MEGA2 (2Mb) ... \$2950
 MEGA4 (4Mb) ... \$3960
 SLM804 ... \$3600
 SM125 Mono Monitor ... \$399
 SC1224 Colour Monitor ... \$679
 520STFM plus SM125 ... \$1298
 520STFM plus RGB Monitor ... \$1578
 1040 plus SM125 ... \$1598
 1040 plus RGB Monitor ... \$1878

Note: The Mega prices do not include a monitor so add the cost of Mono or Colour.

I think the new prices are quite competitive and should lead to some consolidation in the market place for Atari hardware. The Mega's are available now.

Third-party RF modulators are now available for the 1040's - see Brian Petersson. Coupled with the new price of the 1040 then this machine becomes very attractive.

Back to software - MicroBase Computers, Perth have some new items in stock - Word Perfect \$595, TimeWorks Desktop Publisher \$250, Backlash \$55, Tanglewood \$55, Moebius \$67, Hunt for Red October \$67 (submarine type game) plus a lot more.

A new shop in Perth, Paragon Computers (see advert this issue) also have a huge list software and offer the same excellent overnight service. Full lists from both shops are available from me.

I regret the passing of DBasic as reported in this and other magazines for the ST. Due to grossly insufficient sales of the manual (which was extremely cheap), while the language itself was almost free, the maker Hal Hardenbergh of DTack Grounded has disbanded the company and closed shop. I'm not sure how this will affect the order of manuals that we have on the way but we will be trying to find out for those interested.

While I'm on this type of subject, we will all miss copies of The Jackintosh Gazette, the last issue of which was December 1987. Due to the amount of work involved in producing a magazine with no help, the Editor, Eric Lindsay has had to fold it in. Sorry to hear it Eric but good luck for the future.

Now to some more software news.

Epyx are planning to release in the near future **IMPOSSIBLE MISSION 2**. This will be an enhanced update on the previous Commodore version of Impossible Mission.

OUTRUN is due any day now from US Gold (UK) - a 'graphically astounding driving game'.

Gremlin Graphics (UK), a major software programming house are launching out on a slightly different tack. They have ordered their 16-bit programmers to produce original, arcade quality games that stretch the more powerful machines such as the ST to the limit. Already several impressive games are underway - their intention is to make them so stunning that people will be crying out for 8-bit versions (or buy the 16-bit computer?).

One of these will be **3D GALAX** with filled 3D vector graphics and you flying in amongst the aliens rather than fighting them on a single plane. Aliens will attack in 25 formations and there are 99 waves to survive.

Andromeda (Hungary) are working on **ALTERNATIVE GAMES**. This is an 'unashamed spoof on the Epyx Games genre'. Featuring weird and whacky events including sack racing, log flogging, boot throwing and running up walls but nevertheless presenting a fair old challenge.

From Ocean (UK) is coming **WIZBALL**. This ST

version will retain the playability of the excellent original. Programmed by Paul Johnston (he wrote **Arkanoid** for the ST) who has greatly enhanced the graphics, adding a multitude of brilliant touches. He also hopes to include digitised sounds too. The ground will scroll in parallax, icons will flip and we'll see if the eyes of the President's head follow you too. I would say this will be one to buy in the first instance.

Also from Ocean is **HEAD OVER HEELS**.

System 3 (UK) will be releasing **THE LAST NINJA**.

Microprose (US) will be releasing a number of 16-bit programs over the coming months. **F-15 STRIKE EAGLE** (available at Highbury for \$45), **KENNEDY APPROACH**, **GUNSHIP**, **MOEBIUS** (just arrived at Microbase Perth), and **OGRE**.

Activision (US/UK) are due to release **SUPER SPRINT** any day now! And on driving will be **ENDURO RACER**, a conversion of the hit Sega 8-bit game. **RAMPAGE** is also due in December and a possibility early New Year of **UFO ROBO-DANGAR**, **LOCK ON** and **KARNOV**.

From Novagen (UK) comes a top class action game along the lines of Encounter called **BACKLASH** - available only for the ST (from Microbase Perth now). It features solid, detailed objects moving around, in and out of the screen at incredible speeds, even when there are dozens of them on screen. Also from Novagen (and Paul Woakes) is **MERCENARY 2: DAMOCLES**. This takes place in a solar system featuring 9 planets, 19 moons, space stations and maybe some star constellations. On each planet there is a city to explore although as not as huge or complex as Mercenary.

Infogrames (France) come forth with their latest, **L'AFFAIRE**, a detective adventure with graphics.

Knightmare is a new series on English TV from Anglia Television, and yes it revolves around Knights and armour etc. Activision have the computer rights and will be producing an ST version around January 1988.

From The Edge (UK) during December comes **RISK** (tame an occupied planet single handed?). **RISK** = Reconnaissance, Interception, Seek and Kill. From the same company also is **WARLOCK** in which you play an evil Warlock. Expect also to see **GARFIELD** in **The Big Fat Hairy Deal** soon. This company is really getting into the sixteen bit market and will release **INSIDE OUTING** in addition to the above.

English Software (UK) who started out making games only for the Atari 8-bit are into their first ST one with **LEVIATHAN**, a graphically improved Zaxxon style shoot em up.

From Creation Software (UK) is coming **SKYRIDER** fast and furious pure arcade action.

Ariolasoft (Magic Bytes UK) have released 2 new games **CLEVER AND SMART** featuring 2 intrepid detectives on a mission to free the kidnapped Dr Bakterius, and **WESTERN GAMES** a spoof on the sporting theme - there are six events including Arm Wrestling, Shoot the Beer, Tobacco Spitting, Can Can, Milking the Cow and Eating the Beans.

Announced from Arcana Software Design (UK) are 2 games requiring strategy, intelligence and quick fire responses. The first, **POWER PLAY** is a quiz with a mass of elements and has a unique type of game play - wait and see! The second is **MARS COPS** based in the year 2029 - repel the enemy UFO's.

From Domark (UK) comes what may be the best yet - **STAR WARS**. It seems from my readings that a lot of programmers denied that a conversion on a home computer would be impossible while retaining the arcade quality. Well the Domark programmers have proved them all wrong with the ST implementation so close to the arcade-original that it would appear to defy the capabilities of the hardware. The word right now is - buy it as soon as it appears in the shops - you won't regret it.

From Palace Software (UK) comes **BARBARIAN - The Ultimate Warrior**. This is a different game than the Psygnosis Barbarian (available The Computer Centre).

OBLITERATOR. You will be Drak the last of the Obliterators, a genetically enhanced and awesome fighting machine - summoned by The Federation council to infiltrate an alien cruiser. True to the quality of Terropods and Barbarian this will have fantastic graphics.

Broderbund Software (US) have released **SUPERBIKE CHALLENGE** in which you drive a Microids 1000cc super motorcycle through 12 Grand Prix courses - split screen for 2 players with 4 or 6 bikes per race.

ISD Inc. (Canada) will head for a December release of **CALAMUS**, a WYSIWYG typesetting and layout program with screen resolution up to that of a laser printer. With object oriented graphics, hyphenated dictionary and font editor it supports HP and Postscript printers.

Late December or early 88 will see **IDview** from IntelliDesign Inc (US). This is a true 3D (and 2D) mechanical engineering CAD program which can update and store up to 32 views simultaneously. IGES, DXF and LISP support will be available later.

From B.E.S.T. Business Management (US) comes an Integrated accounting package letting you know exactly where you are in any area at any transaction. Includes General ledger, Accts Rec. & Payable, Purch Orders, Cheque Writing Invoicing and Inventory. Available for the ST from BEST Software PO Box 215 Gladesville NSW 2111, Ph 02-816370.

Perhaps I should now tie up this issue with a brief rundown on some new PD just in. As you know Version 2.2 listing some 211 titles is now available.

The next update will include 212 - Enhanced ST BASIC (Rev D) with some 33 new reserved words compatible with previous versions. 213 - 300+ new icons and 36 new borders not previously released for PrintMaster/PrintMaster Plus. 215 - Game Disk 20 - Elevator Mission (Col or Mono) this is a great one and I have yet to unlock the door or survive getting shot. 216 - Game Disk 21 - ST VEGAS where you can play Roulette, Poker, Blackjack or the Slot Machine. 217 - Game Disk 22 - **EXTENSOR** a Tron-like maze. Oops I've run out of space - See you....★

Gem Treasures in Basic

CATCHING THE MOUSE

by Gordon Billingsley

Reprinted from Astun, Utah, August 1987

One of the first things most BASIC programmers noticed about ST BASIC was that there was no command for using the mouse. Fortunately, that's not the whole story. The peeks and pokes that give BASIC access to the GEM interface also give programmers access to the mouse.

It can be used to point, to select (with either button) or to provide co-ordinates for invoking other features one easy gosub call. GOSUB GETMOUSE -- as set up here -- tells you where the mouse pointer is located and whether one of the mouse buttons has been depressed.

Here is the subroutine for using the mouse:

```
10 GETMOUSE:poke control, 124
20 poke contrl+2,0:poke contrl+6,0:vdisys(0)
30 mx=peek(ptsout):my=peek(ptsout+2)
40 button=peek(intout):RETURN
```

The xy co-ordinates are returned in the variables mx and my. Keep in mind these are screen-oriented co-ordinates and not BASIC window-oriented co-ordinates -- that is, co-ordinated 0,0 is in the upper left corner of the screen, which is outside the BASIC window. Co-ordinates for most BASIC statements start within the output window.

Mouse button presses may be detected in a variable call button, with values as follows:

0=no button press; 1=left button pressed; 2=right button pressed.

Here's a short routine to demonstrate the use of GOSUB GETMOUSE

```
10 gotoxy 2,5:?"Click left button to stop"
20 GOSUB GETMOUSE
30 gotoxy 2,2:?"X=";mx;"Y=";my
40 if button =1 then 60
50 goto 20
60 end
```

Notice line 50. It creates an endless loop that forces the program to cycle through GOSUB GETMOUSE repeatedly until a condition that causes it to branch outside the loop is met. This is the sort of routine that can be used for menu selections. Your program won't be doing anything else while waiting for you to make a menu selection.

This little routine also is a handy programming utility. You may place menu items, markers or any other item on the screen then use this routine to identify its exact positions and boundaries. That comes in handy when you want the pointer to be within a specific range of pixels for a button press to be valid. Here's

an example from a game I wrote in which you could choose the number of players to be involved.

```
280 gotoxy 4,6:?"How many players?"
300 HEAD$=CHR$(28)+CHR$(29):chin$=Chr$(30)+chr$(31)
320 GOTOXY 15,6:?head$:gotoxy 15,7:?CHIN$
340 for !=1 to 2:gotoxy 14+!,8:?head$:gotoxy 14+!,9:?chin$:next !
380 for !=1 to 3:gotoxy 14+!,10:?head$:gotoxy 14+!,11:?chin$:next
!
420 for !=1 to 4:gotoxy 14+!,12:?head$:gotoxy 14+!,13:?chin$:next
!
480 GOSUB GETMOUSE
500 if (my>145)*(my<170)*(mx>250)*(mx<275)*(button=1) then players
=1:goto 620
520 if (my>180)*(my<205)*(button=1)*(mx>250)*(MX<290) then
players=2:goto 620
540 if (my>215)*(My<240)*(mx>250)*(mx<310)*(button=1) then players=
3:goto 620
560 if (my>247)*(my<275)*(mx>250)*(mx<325)*(button=1) then players=
4:goto 620
580 if button=1 then gotoxy 0,0:?chr$(7)
600 goto 480
620 END
```

This routine uses the built in graphic face of ST BASIC as a graphic symbol for the number of players in a game. The mouse pointer and button will select one of the lines of the faces only if it is in the vicinity of the faces. Line 580 causes the internal bell to ring if you press the mouse button in a location away from the faces. A hint on using the print bell function: use the gotoxy command just before it. If you don't it will scroll the screen up one line as if you were printing text without a gotoxy command.

Those are the basics - if you'll excuse the pun - of using the mouse. In the next column, we'll look at ways to jazz up your use of the mouse.

Software Exchange Wanted

I have a copy of Alpha Systems- Atari Software Protection Techniques with disk, in brand new condition, which I wish to exchange for the sequel- Alpha Systems Atari Advanced Software Protection Techniques with disk. I may be contacted at home on (049) 51-5731 or at work on (049) 66-9317.
Ask for Bill Hanna.

Time Tests

1. The following tests were done using identical standard pascal code.
2. All operations do NOT directly use any maths coprocessors.
3. **LSP** stands for Light Speed Pascal version 1.11a.
TP stands for Turbo Pascal version 3.01.
OSSP stands for OSS Personal Pascal Version 2.00.
4. All operations except the null loop have had the null loop time removed.
5. The total time is the total time for the test.
6. Division times are similar to multiplication times and subtraction times are similar addition times.
7. Strings were not supposed to be done but are included anyhow.
8. All times are accurate to within a second for each operation except for the Atari which is within 2 seconds.
All times are in seconds.
9. These times were compiled by Ian Florance in Jan 1988.

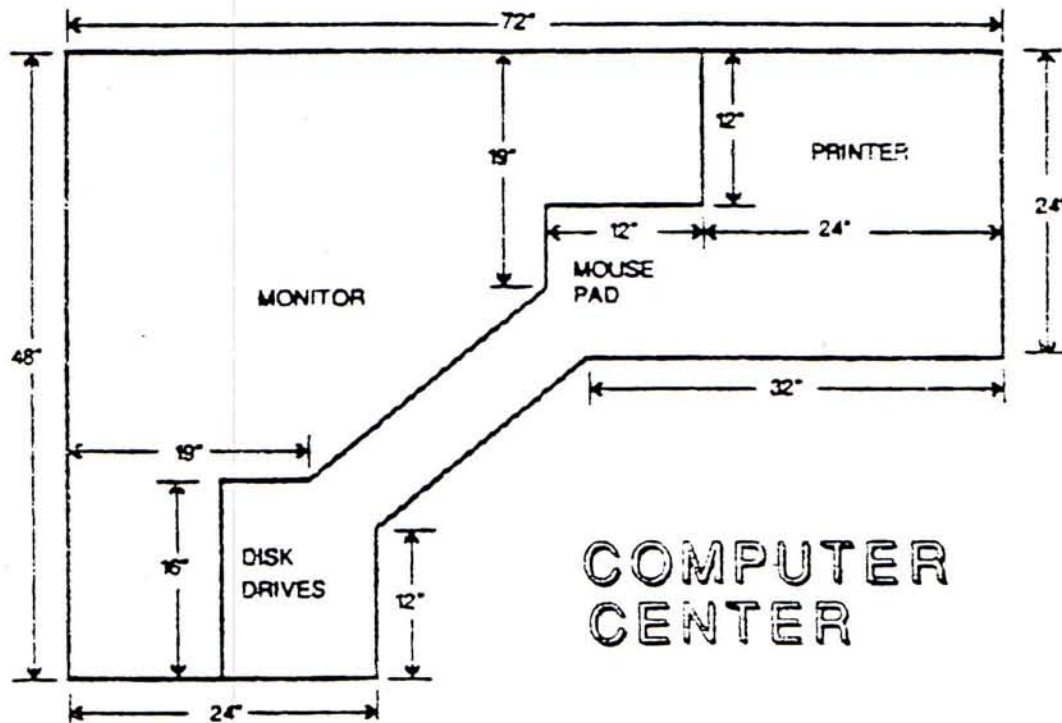
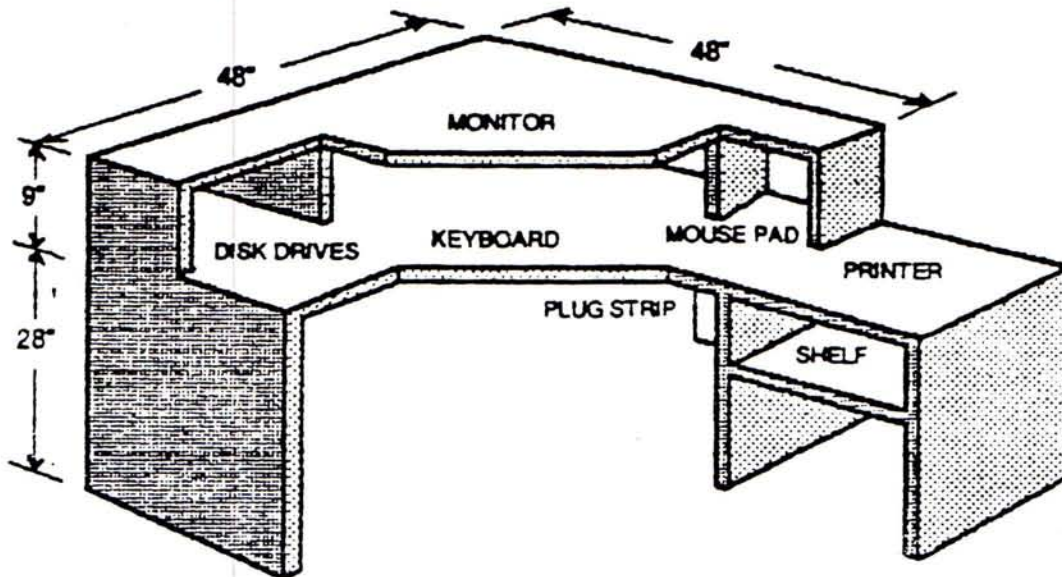
MACHINE LANGUAGE CLOCK SPEED (mHZ)	MAC II LSP 15	MAC SE LSP 8	MAC + LSP 8	BEE TP 4	ATARI OSSP 8	IBM TP 8	IBM AT TP 10
OPERATIONS							
LOOP	3	12	15	29	8	12	4
ARITHMETIC							
BYTE	2	8	11	28	8	13	4
INTEGER	3	8	10	23	8	9	3
LONG INTEGER	2	9	10	----	8	----	----
REAL	257	1164	1122	508	134	220	77
STRINGS							
SORT	0	1	1	3	3	2	1
MULTIPLICATION							
BYTE	8	34	33	259	12	16	6
INTEGER	8	33	34	253	12	13	3
LONG INTEGER	27	83	100	----	80	----	----
REAL	259	1172	1135	2033	186	390	136
ARRAYS							
SINGLE	7	34	30	271	14	12	4
MULTI	7	33	30	415	12	12	4
TOTAL TIME							
COMMON TIME	615	2715	2618	3822	568	801	275
	586	2623	2571	3822	470	801	275
RATIOS							
	2	10	9	14	2	3	1

COMPUTER CENTER

By Bob Tolbert

Reprinted from BETWEEN BYTES Mar 87

Many of you have had a desire to build your own computer center. Well, I have done just that. You might like to see what is possible, so here is a copy of the plans. I hope that you find this design as functional as I have.



COMPUTER
CENTER

ATARI PRODUCT UPDATES

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Just as this issue was about to go to press, we were invited to visit Atari and preview the new SLM804 Laser Printer in action. While we were in the Atari Engineering Department observing their laser printer crank out ultra-sharp pages, on a workbench behind us was a line-up of seven Atari PC clones. These IBM-compatible Ataris were running a wide range of MS-DOS software, from Lotus 1-2-3 to Flight Simulator II. According to Atari Marketing Communications Director Neil Harris, those PCs were a pre-production test shipment. In a manufacturing start-up timetable, this would put the PCs about 30-45 days behind the 2-megabyte Mega 2 and 4Mb Mega 4 three-piece STs.

The first production run of Megas was shipped to software developers and is now going on sale in Germany and France. Harris said that a major "rollout" of the Megas and laser printer would take place in October, with a series of regional dealer meetings. At that time, final prices for these products were to be set.

Antic has just received a developer's 4-megabyte Mega 4 (with blitter chip), which will be covered in detail in coming issues of Antic and in the Spring 1988 issue of STart, The ST Quarterly.

We opened up our Mega's motherboard box and looked at the clean chip layout. Especially impressive was the wide-open Direct Memory Access which should make it easy to tap the power of the Mega for a variety of specialized hardware uses.

Of course, while at the Atari Corp. we also took advantage of the opportunity to check on the latest status of previously announced hardware for the 8-bit computers. According to Harris, the first cargo containers of the 80-column XEP-80 display box (Antic, July 1987) and SX212 1200-baud modems had just arrived in Atari U.S. warehouses. We also heard that the XE Game System computers and many new XL/XE-compatible game cartridges were due to start reaching the stores in October.

However, the double-sided, double-density XF551 Disk Drive shown at the June Consumer Electronics Show (Antic, September 1987) will not be scheduled for manufacture until programming of the new operating system is successfully completed.

Program Listing- "Horseplay"

The following listing is an updated version of the horseracing program "Horseplay" for 8-bit machines.

You can now save a maximum of twenty horses and the relevant information to disk. You can also load this information back into memory. The earlier program only allowed you to save to disk the relevant information of twelve horses.

This program was sent to us by W.J. Niven of ACE Southland, New Zealand.


```

ck (Y/M)";:GET #2,GR
1180 IF GR=ASC("Y") OR GR=ASC("M") THE
M 1200
1190 GOTO 1170
1200 ? CHR$(125)
1210 REM ***store names in pseudo arra
y***
1220 ? " Type in the horses NUMBERS on
ly."
1230 BL$=" ":BL$(10)=BL$:BL$(2)=BL$
1240 FOR HO=1 TO N: ? " HORSE No.":IMP
UT #1,TEMP$
1250 TL=LEN(TEMP$):IF TL<10 THEN TEMP$
(TL+1)=BL$
1260 START=(HO-1)*10+1:AS(START)=TEMP$
:NEXT HO
1270 POKE 752,1:POSITION 6,23: ? "EVERY
THING ABOVE OKAY (Y/M)";:GET #2,YM
1280 IF YM=ASC("Y") THEN 1320
1290 IF YM=ASC("M") THEN 1200
1300 GOTO 1270
1310 REM ***Initialize Array ***
1320 FOR HO=1 TO N:H(HO)=10:NEXT HO
1330 FOR HO=1 TO N: ? CHR$(125)
1340 START=(HO-1)*10+1
1350 ? " Lets Figure No.":AS(START,STA
RT+9)
1360 GOSUB CLASS
1370 TRAP 1370: ? CHR$(125): ? " Still f
iguring No.":AS(START,START+9)
1380 ? : ? " Has he raced since ":DAY$;
" (Y/M)";:GET #2,YM
1390 IF YM=ASC("Y") THEN 1420
1400 IF YM=ASC("M") THEN FP=0:GOTO 143
0
1410 GOTO 1370
1420 ? : ? : ? " Enter the finishing pos
ition": ? " in the last race -> ":INPU
T #1,FP
1430 ? : ? : ? " In the last 5 races"
1440 ? : ? " How many WINS ";:INPUT WIN
5
1450 ? : ? " How many 2ND5 ";:INPUT TWO
5
1460 ? : ? " How many 3RD5 ";:INPUT THR
EE5
1470 ? : ? : ? : ? " EVERYTHING ABOVE
OK (Y/M)";:GET #2,YM
1480 IF YM=ASC("Y") THEN 1510
1490 IF YM=ASC("M") THEN 1370
1500 GOTO 1470
1510 IF FP=1 THEN H(HO)=H(HO)+5
1520 IF FP=2 THEN H(HO)=H(HO)+7
1530 IF FP=3 THEN H(HO)=H(HO)+2
1540 IF FP=4 THEN H(HO)=H(HO)+0
1550 IF FP=5 THEN H(HO)=H(HO)-1
1560 IF FP=6 THEN H(HO)=H(HO)-2
1570 IF FP>6 THEN H(HO)=H(HO)-4
1580 CPTS=WINS*2+TWO5+THREE5
1590 IF CPTS>6 THEN H(HO)=H(HO)+8
1600 IF CPTS=5 THEN H(HO)=H(HO)+6
1610 IF CPTS=4 THEN H(HO)=H(HO)+4
1620 IF CPTS=3 THEN H(HO)=H(HO)+3
1630 IF CPTS=2 THEN H(HO)=H(HO)+1
1640 IF CPTS=1 THEN H(HO)=H(HO)-2
1650 IF CPTS=0 THEN H(HO)=H(HO)-4
1660 TRAP 1660
1670 ? CHR$(125): ? " Figuring No.":AS(
START,START+9)
1680 POSITION 2,3: ? " Add together the
last three placings"
1690 ? " Enter Here ==>"::INPUT #1,LN
GS
1700 H(HO)=LNGS
1710 ? : ? " Enter Todays Weight ==>":;
:INPUT #1,LB5
1720 WT(HO)=LB5
1730 IF FL=ASC("Y") THEN GOSUB 2440:RE
M Mile?
1740 IF GR=ASC("Y") THEN GOSUB 2530:RE
M Grass?
1750 NEXT HO
1760 POKE 752,1:POSITION 6,21: ? "
Stand by .....
1770 TRAP 40000
1780 REM *** Transfer HO to SORT Array
***
1790 FOR HO=1 TO N: SORT(HO)=H(HO):NEXT
HO
1800 GOSUB 2610

```

```

MEM H(HO)=H(HO)+3:GOTO 1840
1830 H(HO)=H(HO)-2
1840 NEXT HO
1850 REM *** Transfer WT to SORT Array
***
1860 FOR HO=1 TO N: SORT(HO)=WT(HO):NEX
T HO
1870 GOSUB 2610:REM Sort SORT(HO)
1880 REM *** Adjust for WT rating ***
1890 FOR HO=1 TO N: IF WT(HO)>=SORT(N-2
) THEN H(HO)=H(HO)+4:GOTO 1910
1900 H(HO)=H(HO)-3
1910 NEXT HO
1920 REM ***Minimum value=1***
1930 FOR HO=1 TO N: IF H(HO)<=0 THEN H(
HO)=1:NEXT HO
1940 RETURN
1950 REM ***Figure and Display ODDS***

1960 TOT=0
1970 FOR HO=1 TO N
1980 TOT=TOT+H(HO):NEXT HO
1990 NUM=0.18:TOT=TOT*0.79:REM Less 21
% Take
2000 FOR HO=1 TO N
2010 START=(HO-1)*10+1
2020 PCT=0:PCT=H(HO)/TOT
2030 IF PCT=0 THEN ODDS$="OUT":GOTO 21
00:REM Scratch
2040 REM ***If odds are higher then 9-
2(NUM) then figure exact***
2050 IF PCT<NUM THEN ODDS$=STR$(INT(1/
PCT-1)):GOTO 2100
2060 REM ***If lower then 9-2 use Tabl
e***
2070 FOR LOOP=1 TO 17:READ TBL,ODDS$
2080 IF PCT>TBL THEN GOTO 2100
2090 NEXT LOOP
2100 IF PFLAG=1 THEN ? #7: " _____ N
o.":AS(START,START+1): " ----> ":ODDS$:G
OTO 2130
2110 IF HO>10 THEN POSITION 21,HO-7: ?
"No.":AS(START,START+1): " -- ":ODDS$:G
OTO 2130
2120 ? " No.":AS(START,START+1): " -
- ":ODDS$
2130 RESTORE 2140:RESTORE 2150:NEXT HO
:CLOSE #7:PFLAG=0:RETURN
2140 DATA .85,1-5,.71,2-5,.67,1-2,.62,
3-5,.55,4-5,.5,EVEN,.45,6-5,.41,7-5,.4
,3-2,.38,8-5,.35,9-5
2150 DATA .33,2,.28,5-2,.25,3,.22,7-2,
.2,4,.18,9-2
2160 REM
2170 POKE 752,0: ? : ? " Did he finish i
n the first five"
2180 ? " in his last race (Y/M) ";:GET
#2,YM:REM HIGHWEGHT RACE
2190 IF YM=ASC("Y") THEN H(HO)=H(HO)+4
:RETURN
2200 IF YM=ASC("M") THEN H(HO)=H(HO)-3
:RETURN
2210 GOTO 2170
2220 POKE 752,0: ? : ? " Did he finish i
n the first five"
2230 ? " in his last race (Y/M) ";:GET
#2,YM:REM MAIDEN RACE
2240 IF YM=ASC("Y") THEN 2270
2250 IF YM=ASC("M") THEN 2310
2260 GOTO 2220
2270 ? : ? : ? " Was the last race over"
: ? " the same Distance (Y/M)";:GET #2,
YM
2280 IF YM=ASC("Y") THEN H(HO)=H(HO)-4
:RETURN
2290 IF YM=ASC("M") THEN H(HO)=H(HO)+7
:RETURN
2300 GOTO 2270
2310 ? : ? : ? " Has he run only": ? " in
Maiden races (Y/M)";:GET #2,YM
2320 IF YM=ASC("Y") THEN RETURN
2330 IF YM=ASC("M") THEN H(HO)=H(HO)-4
:RETURN
2340 GOTO 2310
2350 POKE 752,0: ? : ? " Did he finish i
n the first five"
2360 ? " in his last race (Y/M) ";:GET
#2,YM:REM STAKES RACE AND HANDICAP RA
CE

```



```

:RETURN
2420 IF YN=ASC("N") THEN RETURN
2430 GOTO 2400
2440 ? :? :? " Was his last race the same"
2450 ? " as todays race distance? (Y/N)";GET #2,YN
2460 IF YN=ASC("Y") THEN H(HO)=H(HO)+3
:RETURN
2470 IF YN=ASC("N") THEN 2490
2480 GOTO 2440
2490 ? :? :? " Was the last race further"? " than todays race distance (Y/N)";GET #2,YN
2500 IF YN=ASC("Y") THEN H(HO)=H(HO)+1
:RETURN
2510 IF YN=ASC("N") THEN RETURN
2520 GOTO 2490
2530 ? :? :? " Has he won over todays"? " race distance (Y/N)";GET #2,YN
2540 IF YN=ASC("Y") THEN H(HO)=H(HO)+3
:RETURN
2550 IF YN=ASC("N") THEN 2570
2560 GOTO 2530
2570 ? :? :? " Has he won at all on"? " this race track (Y/N)";GET #2,YN
2580 IF YN=ASC("Y") THEN H(HO)=H(HO)+1
:RETURN
2590 IF YN=ASC("N") THEN RETURN
2600 GOTO 2570
2610 REM *** Sort Routine ***
2620 M=HO-1:M=N
2630 M=INT(M/2):IF M=0 THEN RETURN
2640 FOR J=1 TO M-M:HO=J
2650 L=HO+M
2660 IF SORT(HO)<=SORT(L) THEN 2680
2670 X=HO:HO=L:L=X:HO=X:IF HO=1 THEN 2650
2680 NEXT J
2690 GOTO 2630
2700 REM Save a race to Disk
2710 TRAP 2790
2720 IF M=0 THEN POSITION 14,20:"No Field!":CHR$(253):FOR D=1 TO 100:NEXT D:RETURN
2730 POSITION 12,20:"Saving Race ";RACES
2740 FILES="D1:":FILES(4)="RACE":FILES(8)=RACES
2750 OPEN #5,8,0,FILES
2760 ? #5;TRK$;CHR$(155);DAT$;CHR$(155);RACES;CHR$(155);A$;CHR$(155);N
2770 FOR HO=1 TO M: ? #5;H(HO):NEXT HO
2780 CLOSE #5:RETURN
2790 CLOSE #5: ? "K":POKE 752,1:POSITION 6,20:"Unable to access disk drive.":CHR$(253):FOR D=1 TO 150:NEXT D:RETURN
2800 REM Get a race from Disk
2810 POKE 752,1:POSITION 7,22:"Get which race number ->";INPUT RACES

```

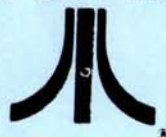
```

2820 OPEN #3,4,0,FILES
2850 INPUT #5;TRK$,DAT$,RACES$,A$,N
2860 FOR HO=1 TO M:INPUT #5;DATA:H(HO)=DATA:NEXT HO
2870 CLOSE #5:RETURN
2880 PRINT CHR$(125):POSITION 10,21:"No Race NO.":RACES;" ":"on Disk"
2890 ? CHR$(253):FOR DLY=1 TO 100:NEXT DLY:GOTO 2870
2900 REM *** Read Disk Files ***
2910 PRINT CHR$(125):POKE 16,64:POKE 53774,64:POKE 752,1:POKE 712,200:POKE 710,200:POKE 709,0:OPEN #7,6,0,"D:*.*)"
2920 INPUT #7;FILES: ? FILES
2930 IF FILES(5,8)="FREE" THEN CLOSE #7: ? " Press RETURN ";GET #2,WAIT:RETURN
2940 GOTO 2920
2950 REM *** Delete a File ***
2960 POSITION 10,20:"Which race do you":POSITION 10,21:"Wish to delete ";INPUT RACES
2970 FILES="D1:":FILES(4)="RACE":FILES(8)=RACES
2980 XIO 33,#7,0,0,FILES:RETURN
2990 POKE 752,0:REM Scratches
3000 IF M=0 THEN POKE 752,1:POSITION 14,20:"No Field!":CHR$(253):FOR D=1 TO 100:NEXT D:RETURN
3010 POKE 752,1:POSITION 3,20:"Type in the number that you wish": ? " to scratch then press RETURN No.":INPUT TEMP$
3020 TL=LEN(TEMP$)
3030 FOR HO=1 TO M
3040 START=(HO-1)*10+1
3050 IF TEMP$=A$(START,START+1+TL) THEN M=A$(START,START+9)="SCRATCHED ":H(HO)=0:RETURN
3060 NEXT HO:PRINT CHR$(125):PRINT CHR$(253):POKE 752,1:POSITION 8,21:"No number ";TEMP$;" in this race."
3065 FOR D=1 TO 150:NEXT D:RETURN
3070 REM *** Print a Race ***
3080 IF M=0 THEN POSITION 14,20:"No Field!":CHR$(253):FOR D=1 TO 100:NEXT D:RETURN
3090 TRAP 3130:OPEN #7,8,0,"P:":POSITION 3,21:"Position the Paper Then Hit RETURN";GET #2,WAIT
3095 ? #7;CHR$(27);"41";CHR$(27);"x1"
3100 PFLAG=1: ? #7: ? #7;" ";TRK$: ? #7;" ";DAT$: ? #7;" RACE No.":RACES: ? #7
3110 GOSUB 1960:RETURN
3120 GRAPHICS 0:CLOSE #1:CLOSE #2:END
3130 CLOSE #7:POSITION 3,21: ? "
3140 POSITION 4,21:"Your PRINTER isn't turned on.... ":FOR D=1 TO 100:NEXT D:RETURN

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